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## DISCUSSION PAPER SERIES

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# Do Tobacco Bans Harm the Advertising Industry?

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## Abstract

We use panel data on advertising expenditures to check the influence of tobacco advertising bans on the advertising industry. We find no clear evidence of a negative effect of tobacco bans on total per capita advertising expenditures.

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## Introduction

Many governments have tried to reduce consumption of tobacco by limiting possibilities for the tobacco industry to advertise its products (see Chaloupka and Saffer (2000) for an overview). Not surprisingly, attempts to introduce or strengthen such restrictions have drawn a lot of criticism from the two industries most affected by these restrictions - the tobacco industry and the advertisement industry.

Arguments used by opponents of such bans range from claims that bans are not successful in reducing tobacco consumption, that the health dangers of tobacco are exaggerated to claims that the economy will suffer because of such bans. The latter concerns include employment loss (e.g. Connolly, 2000; European Parliament, 2002), bankruptcy of advertising enterprises (Innova Capital, 1999) and loss of revenue for local budgets (Novodey, 2006) and for the advertising firms (Bidenko, 2006).

Supporters of the restrictions, however, argue such claims are exaggerated. For example, the EU indicated that “applying the 1989 television advertising directive, and the 1998 general advertising directive, as well as the various national rules and regulations on tobacco advertising and sponsorship (as in Ireland, Belgium, France, Finland, Portugal etc.) has shown no evidence of net job losses in the economy” (Health and Consumer Protection Directorate – General, 2000). Bjartveit (2003) notes that in Norway, which had banned tobacco advertising in 1975, the 8-years average annual growth of advertising in newspapers before the ban was 3.9% against 5.6% during the 8 years after the ban.

Though there exists this kind of anecdotal evidence on the experience of specific countries, as far as we are aware, there is no study that analyzes whether the advertisement industry systematically goes through a crisis after the introduction or strengthening of regulation on tobacco advertising. In this paper, we shed light on this issue by analyzing the relationship between the level of regulation of tobacco advertising and advertisement expenditures.

It is important to note that we do not focus on the effect of bans on advertisement expenditures on tobacco products; instead we look at total advertisement expenditures in a country. We do this to capture possible spillovers - a tobacco company that faces a ban on advertising its tobacco products could increase its advertisement on other items in its product range, for example its clothing line<sup>1</sup>.

## Empirical Analysis

We use data from the World Advertising Research Center (WARC)<sup>2</sup>, United Nations Statistics Division (UNSD)<sup>3</sup>, and the World Health Organization<sup>4</sup> for the period 1995-2005 and 23 European countries<sup>5</sup>.

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<sup>1</sup> As far as we are aware panel data on tobacco advertising expenditures do not exist.

<sup>2</sup> The data on advertising expenditures are available at <http://www.warc.com/LandingPages/Data/Adspend/AdspendByCountry.asp?Region=Europe>

We focus on 6 media: TV<sup>6</sup>, radio, print, outdoors (billboards), cinema, and points of sales. We form dummies for advertising bans in those media making dummies equal to one in all years a ban exists, and equal to zero before the year of introduction of the ban.

Gross national income (GNI) per capita (included to control for differences in wealth) and advertising expenditures are expressed in real 1990 USD<sup>7</sup>, in logarithms and per capita (to control for different size of the countries).

We run a regression of the logarithm of total per capita advertisement expenditures on a country fixed effect (we want to focus on how a country does before and after - the time dimension, rather than compare different countries - the cross-sectional dimension), the log of per capita GNI, a country specific time trend (given that we observe very different growth rates in advertising expenditures in different countries), and different ban indicators.

We use two estimation techniques to correct our results for heteroskedasticity and autocorrelation, which were detected with a Wooldridge test and modified Wald test.

We use fixed effects with robust standard errors (Wooldridge (2002) argues that this makes the results valid in the presence of any heteroskedasticity or serial when T is small relative to N).

We also show the results of a feasible GLS estimation with panel-specific first-order autocorrelation and heteroskedastic error structure without cross-sectional correlation<sup>8</sup> - for cases where N is close to T this method is preferable.

To avoid multicollinearity between ban dummies<sup>9</sup>, we introduce one more specification: instead of using separate ban dummies we construct a variable reflecting a count of the number of media banned in a particular year. To check for possible non-linearities, we add the square of the count variable. This implicitly assumes that the effect on advertising expenditures of all media bans is the same.

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<sup>3</sup> The GNI per capita, price deflator, population estimates, and exchange rates were taken from National Accounts Main Aggregates Database, <http://unstats.un.org/unsd/snaama/selectionbasicFast.asp>

<sup>4</sup> The information about the tobacco regulations was taken from the Tobacco Control Database of the WHO Regional Office for Europe, <http://data.euro.who.int/tobacco/>

<sup>5</sup> The countries are: Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Ireland, Latvia, Poland, Netherlands, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

<sup>6</sup> Since in our sample, bans of cable TV and national TV always go together, we consider them jointly as a TV ban.

<sup>7</sup> The original advertising expenditures for most countries are nominated in national currencies. We used UNSD exchange rates and UNSD implicit price deflator to standardize the values to 1990 USD.

<sup>8</sup> Note that since we used xtglm command we also included country-specific dummies to estimate fixed effects.

<sup>9</sup> 10 countries introduced 3 and more tobacco advertising bans at the same time. In 4 countries tobacco advertising was simultaneously banned in 5 media.

Tables 1 and 2 present the results<sup>10</sup>.

**Table 1. Total Advertising Expenditures: influence of bans in separate media**

	FE (robust) Log (Total advertising expenditures per capita)	FGLS
GNI per capita	1.529** (0.032)	1.371*** (9.60e-10)
TV	0.164 (0.28)	0.0932** (0.024)
Radio	-0.0119 (0.90)	0.0212 (0.52)
National printed editions	-0.00866 (0.88)	-0.00195 (0.93)
Outdoors	0.0654 (0.27)	0.00603 (0.81)
Points of sales	0.0944 (0.14)	0.0524** (0.039)
Cinemas	-0.00987 (0.87)	0.0175 (0.47)
Constant	-10.21 (0.11)	
Observations	253	253
Number of countries	23	23
R <sup>2</sup>	0.942	.
Robust p values in parentheses *** p<0.01, ** p<0.05, * p<0.1		

The fixed effects estimation shows no significant effect of tobacco bans on advertising expenditures. One possible explanation is a substitution towards non-banned media or non-banned products. O'Donovan, Rae and Grimes (2000) show, for example, that TV advertising is a substitute for advertising in printed media.

When FGLS is used, two separate bans (for TV and points of sales advertising) significantly influence the total per capita advertising level. The relatively small but positive effect indicates that some tobacco bans increase advertising spending.

This can be explained as follows: when a media is banned, the competition between media for tobacco advertising decreases leading to higher prices and thus to greater total advertising spending. Harper (2001) also describes how in Australia after tobacco advertising was banned in some media, the tobacco industry started advertising more aggressively in non-banned media which could boost total advertising spending.

<sup>10</sup> Note that while we include country-specific trends, year and country dummies into the regressions here and after, we do not report their estimated coefficients to keep the presentation simple.

**Table 2. Total Advertising Expenditures: influence of the cumulative ban variable**

	FE (robust) Log(Total advertising expenditures per capita)	FGLS Log(Total advertising expenditures per capita)
GNI per capita <sup>i)</sup>	1.439** (0.035)	1.324*** (1.31e-09)
Cumulative ban	0.0742 (0.24)	0.0527*** (0.0032)
cumulative ban squared	-0.00650 (0.48)	-0.00514* (0.074)
Constant	-9.394 (0.12)	
Observations	253	253
Number of countries	23	23
R <sup>2</sup>	0.941	.
Robust p values in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

The cumulative ban (Table 2) is also significant if estimated through FGLS. The joint effect of bans is non-negative for all possible values (from 0 to 6). When tobacco ads are banned in only a few media the joint effect grows with every additional ban – again because of the narrower channels of influence and lower competition between media. However, after a certain number of media is banned, the law of diminishing returns starts reducing the marginal effect of each additional dollar spent on advertising in a given remaining media (Chaloupka and Saffer, 2000), and the effect of additional bans becomes negative.

All estimations show that real GNI per capita has a positive and significant effect on total per capita advertising. This is consistent with the literature which shows that advertising expenditures closely follow the business cycle (Picard, 2001, and for a brief review of this literature see O'Donovan, Rae and Grimes, 2000).

The attentive reader might argue that what we have shown so far are correlations rather than causal relations. Indeed, one could claim that in fact, advertising expenditures influence GNI. However, O'Donovan, Rae and Grimes (2000) investigate this causality question using data from New Zealand and conclude that in the long-run, aggregate consumption is a determinant of aggregate advertising spending, not visa-versa.

More importantly, one could claim that the implementation of tobacco regulation is not 'random' – indeed, smart politicians that foresee the criticism that such regulations may harm the advertising industry may choose to introduce tobacco bans at times when the advertising industry is doing well. If so, we would find a positive relation between the presence of tobacco laws and the amount of advertising expenditures. Unfortunately, we do not have an instrumental variable that would allow us to clearly distinguish between causality and correlation. Still, if the politicians of the countries in our sample, have

systematically been able to choose the timing of the introduction of laws in such a way that possible harmful effects are difficult to observe, this also should comfort the advertising industry in countries where such laws still need to be developed.

To check for substitution effects between media, we also analyzed the advertising expenditures in four specific kinds of media (TV, radio, printed editions, and outdoors advertising). Again, we used log-levels of per capita advertising expenditures (in 1990 USD) now in different media and ran the same regressions as for total expenditures<sup>11</sup>. In three out of four cases, the signs of the coefficient of a tobacco ban on its own media expenditures is negative – but only for outdoor expenditures this effect is significant in both specifications. A ban on tobacco advertising on TV, however, goes together with an increase in advertising expenditures on this medium. As far as substitution effects are concerned, we found that bans on tobacco advertising in cinema have, not surprisingly, a negative effect on TV advertising expenditures but a positive effect on radio and printed advertising. It is less easy to explain why TV bans would have a negative effect on printed media.

## Conclusions

In this paper, we analyze whether tobacco bans are harmful for the advertising industry. The data show little evidence to support claims that this indeed is the case – our overall results, if anything, show that advertising bans go together with higher advertising expenditures rather than lower advertising expenditures – this can be due to substitution from banned to non-banned media, from more intensive advertising campaigns by the tobacco industry to compensate for the loss of the banned media or because politicians have chosen to introduce such laws in times that the advertising industry is doing well.

Specific advertising companies that focus on tobacco advertising obviously may suffer from the introduction of bans but if the tobacco advertising ban is announced beforehand they easily could avoid losses by diversifying their offerings.

From a policy perspective, it seems policy makers should not be too concerned about the advertising industry's faith when they contemplate strengthen tobacco advertising regulation, as long as they choose the timing carefully, aiming for periods of economic growth.

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<sup>11</sup> To shorten the presentation we omit the estimated figures. The detailed results of estimation are available upon request.

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